REVIEWS

Plant Reproductive Ecology: Patterns and Strategies. Edited by J. Lovett Doust and L. Lovett Doust. 1988. Oxford University Press, New York. xiii + 344 pages. Softcover: $24.95, ISBN 0-19-506394-5.

This book is a collection of fifteen reviews of plant reproductive ecology. Because of the diversity of topics that are covered and the diversity of approaches taken by the contributors, this book is a valuable introduction to current concepts and research in the ecology and evolution of plant reproduction. Seven chapters address conceptual issues in this field, five consider ecological forces affecting reproduction, and three survey the reproductive ecology of non-angiosperms. Together, they are an attempt to present a cohesive and synthetic review of the field for both researchers and newcomers. Despite the book's title, many of the authors also consider genetic, population genetic and phylogenetic approaches in order to address the evolution of plant reproductive characteristics, perhaps signalling a greater synthesis than even the editors had envisioned.

Chapters range from purely factual summaries of a topic (Meagher) to synthetic reviews incorporating many avenues of research. The evolution of reproductive traits and strategies arises in most chapters but is addressed in a variety of ways. Some authors rely on verbal arguments of fitness and selection. Others use the concept of inclusive fitness to examine reproductive traits (Haig and Westoby, in a chapter on parent-offspring conflicts in seed provisioning). Game theory and evolutionarily stable strategies (ESS) are featured in several contributions (Cox and others). An ESS is a phenotype such that, if almost all individuals have it, no alternative phenotype can invade the population. This approach assumes an asexual population in which phenotypes breed true. ESS reasoning is attractive because complex evolutionary situations are made manageable by being reduced to a consideration of alternative states. When applied to sexual organisms, however, this simplification is achieved at the price of ignoring the question of transmission of phenotypes from one generation to the next (the province of population and quantitative genetics). Sexual populations do not necessarily evolve to an ESS, and therefore ESS arguments, while illuminating, do not by themselves provide a convincing evolutionary scenario.

The genetic considerations necessary to understand the evolution of reproductive traits are, however, included in a number of chapters, thus expanding the scope of the book beyond reproductive ecology alone (Barrett and, to a lesser degree, others). The conceptual section begins with an overview by the editors of this volume. Provocatively entitled "The sociobiology of plants: an emerging synthesis", Lovett Doust and Lovett Doust discuss the transfer of concepts from animal sociobiology to plant ecology and provide a brief overview of theory and data on topics ranging from sex allocation to incompatibility and the sociobiology of the seed. This is followed by more detailed chapters on male fitness and evolution of paternal strategy (Bertin), inclusive fitness and maternal care (Haig and Westoby), monomorphic and dimorphic sexual strategies (Cox), the evolution, maintenance, and loss of self-incompatibility systems (Barrett), sex determination (Meagher), and gender modification and gender choice (Schlessman). The ecological section includes some chapters that focus on specific stages of the reproductive process and others that consider more general issues. Zimmerman examines the ways in which plants can manipulate their pollinators and Lee discusses factors influencing fruit and seed production. Waller investigates the relationship of plant morphology and reproduction. Chapters on the effects of competition (Weiner) and herbivory (Hendrix) on reproduction conclude this section. The chapters describing the reproductive biology on non-angiosperms are

Madroño, Vol. 39, No. 4, pp. 311–312, 1992

valuable for their exposition of the diversity of reproductive patterns in plants. These have generally been neglected by plant reproductive biologists. All of the authors, however, go beyond a mere description of reproductive strategies.

Mishler reviews the reproductive ecology of bryophytes and concludes that their reproductive abilities are far from optimal. In contrast to some of the other authors in this volume, Mishler cautions against an adaptationist approach to plant reproduction and emphasizes the utility of a phylogenetic framework for approaching the assumption of adaption in evolutionary ecology more rigorously. DeWreede and Klinger describe reproductive strategies in algae and discuss resource allocation and sex ratio theory in these organisms. Cousens describes reproductive strategies of pteridophytes, including quantitative studies of mating systems and genetic structure of pteridophyte populations, and discusses features of reproductive allocation, phenology and demography influencing pteridophyte reproduction. The contributors to this book have provided useful and comprehensive surveys of disparate topics. Typographical errors are rare. The deliberate inclusion of material on non-angiosperms is admirable, and the population genetic and phylogenetic approaches used by some authors broadens the appeal and increases the value of this book. Although now several years old, this collection of reviews provides an excellent introduction to current concepts and research in the ecology and evolution of plant reproduction.

—Kaius Helenurm, Department of Biology, San Diego State University, San Diego, CA 92182.

Global Patterns—Climate, Vegetation, and Soils. By Wallace E. Akin. 1990. University of Oklahoma Press, Norman. ix + 370 pages. ISBN 0-8061-2309-5.

Consistent with the title, this book is divided into three sections: Global patterns of 1) Climate, 2) Vegetation, and 3) Soils. The strength of the book is the thorough and very readable coverage of climatic pattern and processes. This section is nicely illustrated and, in itself, makes the book worth purchasing. Soils are well described, however, the section on vegetation is rather disappointing in that it merely describes global patterns but does not adequately relate these to processes under climatic or edaphic control.

—Jon E. Keeley, Ed.

Editor's Report for Volume 39

This annual report provides an opportunity for the editor to communicate the status of manuscripts received for publication in *Madroño* and to comment on the journal. Between 1 July 1991 and 30 June 1992, 65 manuscripts were received. These comprised 35 articles (9 published, 7 in press, 4 in review, 10 in revision and 5 rejected), 8 notes (4 published, 2 in press and 2 in review) and 22 noteworthy collections (17 published, 2 in press and 3 in review). Volume 39 was composed of 27 articles (17 systematic and 10 ecological) 12 notes, 20 noteworthy collections, 3 book reviews, 2 obituaries and several announcements.

I thank the Board of Editors for editorial assistance, Steven Timbrook for his continuing contribution of the annual Index and Table of Contents, Barbara Ertter for assistance with the dedication and John Strother for his continued assistance with taxonomic details.

This year has seen more than a 20% increase over the previous year in submissions and a continued high quality of manuscripts. Also, I am pleased with the thorough, tactful and helpful comments by reviewers and, although high levels of community service normally set the research sciences apart from other professions, the reviewers I have dealt with this year have been very generous in their time. Lastly, I acknowledge the excellent job done by the Allen Press staff in the production of our high quality journal.—J.E.K. 1 Oct 1992.